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SWMU CLOSEOUT PACKAGE

for

ALLEGANY BALLISTICS LABORATORY
ROCKET CENTER, WEST VIRGINIA

SWMU 37B – Building 7 Wastewater Sump

Contents:

SWMU CLOSE-OUT DOCUMENT

SWMU 37B - Building 7 Wastewater Sump

Based upon current conditions at Solid Waste Management Unit (SWMU) 37B; a site visit; and a desktop evaluation performed by the Remedial Program Managers (RPMs), defined as the Department of Navy (DoN), the U. S. Environmental Protection Agency (USEPA) Region III, and the West Virginia Department of Environmental Protection (WVDEP), using the data presented in this document, it was determined that current conditions, including active groundwater remediation at Site 10, are protective of human health and the environment for SWMU 37B. As appropriate, constituent concentrations, pathways, and receptors were all evaluated using the most recent version of USEPA Region III Risk-Based Concentrations (RBC Tables) (USEPA, April 2002), soil screening levels (SSLs) (USEPA, April 2002), State of West Virginia total petroleum hydrocarbon (TPH) screening levels, maximum contaminant levels (MCLs) (USEPA, Summer 2000), historical information, and best professional judgement. Based upon the above, it is the consensus of the RPMs that soil at SWMU 37B requires no further action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, for residential land use. Because SWMU 37B is within CERCLA Site 10, for which there is an ongoing groundwater remedial action, groundwater contamination detected at SWMU 37B will be addressed as part of the Record of Decision for Site 10 groundwater.

Bruce L Beach — 7/16/2002

Bruce Beach, EPA Region III RPM — Date

Donald W Mitchell for — 7/16/02

Tom Bass, WVDEP RPM — Date

7/16/02

Dominic O'Connor, LANTDIV RPM — Date

SITE SUMMARY
SWMU 37B – Building 7 Wastewater Sump

1.0 Description

SWMU 37B is the former Building 7 wastewater sump. The SWMU was a covered concrete sump that once received wash-down water from automotive maintenance activities at Building 7 beginning in the 1940s. Because of the nature of these activities, the Building 7 sump potentially received coolants, oils, and solvents. The location of the former sump with respect to Building 7 is shown in Figure 1.

During the site visit for the Phase I SWMU/AOC Investigation, it was noted that all sides of the SWMU 37B sump were cracked and that there were especially large cracks on the west side of the sump (CH2M HILL, October 2001).

2.0 Field Investigation and Removal Activities

The Phase II RCRA Facility Assessment (RFA) concluded that the potential for release to air from SWMU 37B was low due to the characteristics of the waste released into the sump and the presence of the wooden cover. The potential for release to soil and groundwater was considered high because the sump was unlined and cracks were observed in the concrete. The potential for release to surface water was considered high because the sump may have discharged to the facility's drainage ditch system (SWMU 27A), which discharges to the North Branch Potomac River. The RFA recommended that the integrity of the unit be determined, and if unsound, that soil samples be collected from around the unit and analyzed to determine if any releases had occurred (A. T. Kearney, August 1993).

The RPMs decided to collect one subsurface soil sample (i.e., 37B-1-D) at 4 to 6 feet below ground surface (bgs) from the west side of the wastewater sump during the Phase I SWMU/AOC Investigation. The sample was analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and polychlorinated biphenyls (PCBs) and for Target Analyte List (TAL) inorganics. Figure 1 shows the location of the soil sample collected at SWMU 37B during the Phase I SWMU/AOC Investigation (CH2M HILL, October 2001).

Based on the information gathered during the Phase I SWMU/AOC Investigation, the RPMs determined that additional evaluation of SWMU 37B should be conducted to determine whether potential releases from the sump had impacted the shallow groundwater. Therefore, a direct-push groundwater sample (i.e., 37B-2-GW, and duplicate 37B-2-GW/DUP) was collected on the downgradient side of the sump during the Phase II SWMU/AOC Investigation. The samples were submitted to the offsite laboratory for TCL VOCs, SVOCs, pesticides, and PCBs; TAL inorganics; explosives; and total petroleum hydrocarbons (TPH) analyses (CH2M HILL, June 2001). The sample location is shown in Figure 1.

A removal action was performed at the unit in 2000 by CH2M HILL. As part of this removal action, the sump contents were characterized for disposal purposes. One aqueous sample (37B-IW-01) was collected from inside of the sump and analyzed for full toxicity characteristic

leaching procedure (TCLP) parameters, and reactivity, corrosivity, and ignitability (RCI). There was an insufficient quantity of sediment in the sump to collect a sample.

Following removal of the sump, confirmatory soil samples were collected from each of the excavation walls and floor to ensure a sufficient quantity of associated soil was removed with the sump. Soil samples 37B-SB-N01 (and duplicate sample 37B-SB-N01P), 37B-SB-S01, 37B-SB-E01, and 37B-SB-W01 were collected from the north, south, east, and west walls, respectively. 37B-SB-F01 was collected from the bottom of the excavation. Confirmatory soil samples were analyzed for TCL VOCs, SVOCs, and PCBs; TAL inorganics; explosives; and gasoline- and diesel-range TPHs (i.e., TPH-DRO and TPH-GRO) (CH2M HILL, August 2001).

3.0 Summary of Analytical Results

The analytical results of historical investigations and the removal action at SWMU 37B are described below.

3.1 Phase I and Phase II SWMU/AOC Investigation Results

Table 1 presents a summary of the analytical results for the soil sample collected at SWMU 37B during the Phase I SWMU/AOC Investigation. As shown in the table, no SVOCs or PCBs were detected in the soil sample. Tetrachloroethene (PCE) and trichloroethene (TCE) were the only VOCs detected in soil, each at an estimated 3 µg/kg. Seventeen inorganics were detected; lead was detected at a concentration (i.e., 21 mg/kg) significantly below the action level of 400 mg/kg (USEPA, December 1996).

Table 2 presents a summary of the analytical results for the groundwater sample collected at SWMU 37B during the Phase II SWMU/AOC Investigation. The table shows that no pesticides, PCBs, or TPH constituents were detected in groundwater. Eight VOCs (i.e., 1,1,1-trichloroethane [1,1,1-TCA], 1,1-dichloroethane [1,1-DCA], 1,1-dichloroethene [1,1-DCE], acetone, methylene chloride, PCE, TCE, and cis-1,2-DCE) and one SVOC (i.e., bis[2-ethylhexyl]phthalate) were detected in the sample. Of the VOCs, the concentrations of only 1,1,1-TCA and TCE were not qualified as estimated. Three of the organic constituents (i.e., acetone, methylene chloride, and bis[2-ethylhexyl]phthalate) are common laboratory contaminants. In fact, methylene chloride and bis(2-ethylhexyl)phthalate were "B" flagged by the data validator, indicating that similar concentrations were detected in the quality control/quality assurance (QA/QC) blank(s).

Twenty inorganic constituents were detected in the groundwater sample. Inorganics not detected above the instrument quantitation limit (i.e., "U" flagged) were antimony, mercury, selenium, and silver. Several inorganics (i.e., aluminum, cadmium, chromium, cobalt, iron, potassium, and vanadium) were detected at estimated concentrations and qualified with a "J" flag by the data validator. The results for cyanide and lead were "B" flagged by the data validator. The results for arsenic and thallium were "K" flagged, indicating that the reported concentrations are biased high.

3.2 Removal Action Analytical Results

Table 3 presents a summary of the analytical results for the liquid waste characterization sample collected from the wastewater sump during the removal action. There was an insufficient

quantity of sediment in the sump to collect a sample. Based on the data in Table 3, the liquid waste from the SWMU 37B sump was characterized as non-hazardous and disposed of offsite accordingly.

Table 4 presents a summary of the analytical results for confirmatory soil samples collected at SWMU 37B during the removal action. As shown in Table 4, no PCBs or explosives were detected. Low, estimated levels of several VOCs (i.e., 2-butanone, acetone, cumene, ethylbenzene, m- and p-xylene) and several SVOCs (i.e., benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, phenanthrene, and pyrene) were detected in the confirmatory soil samples. In addition, twenty-one inorganics were detected. Similar to the Phase I SWMU/AOC Investigation results, the lead concentrations detected in the confirmatory soil samples (i.e., maximum of 48.4 mg/kg) are significantly below the lead action level.

TPH-DRO was detected in all confirmatory samples except the one collected from the west wall of the excavation, with the highest concentration (i.e., 220 mg/kg) detected in the sample collected from the floor of the excavation. TPH-GRO was detected in two of the five confirmatory samples, with the highest concentration (i.e., 54 mg/kg) detected in the floor sample.

The concentrations of all constituents detected in the groundwater and confirmatory soil samples were evaluated using a formal screening process. This process is presented and discussed in Section 4.

4.0 Constituent Comparison to Screening Criteria

The general screening process for SWMU sample data is enumerated below. Following the general description of each step, the process as applied to SWMU 37B is described. The results of the screening process for SWMU 37B groundwater and soil are summarized in tables 5 and 6, respectively.

1. For each detected constituent type (e.g., inorganics, explosives, etc.):

   Groundwater

   The maximum concentration of each detected constituent is compared to its USEPA MCL to identify any constituents that should be considered for remediation. Next, the maximum concentration is compared to its tap water RBC at a hazard quotient (HQ) of 0.1.

   As noted in Section 3.0, eight VOCs (i.e., 1,1,1-TCA, 1,1-DCA, 1,1-DCE, acetone, methylene chloride, PCE, TCE, and cis-1,2-DCE) and one SVOC (i.e., bis[2-ethylhexyl]phthalate) were detected in SWMU 37B groundwater. Of these, only TCE was detected above the MCL, which is designated in the "Max" column in Table 5 with a superscript letter "a." This exceedance is discussed further in Section 6.0.

   Three organics (i.e., 1,1-DCE, PCE, and TCE) were detected above their respective tap water RBCs at an HQ of 0.1. These exceedances are designated in the "Max" column in Table 5 with a superscript letter "b."

   Of the inorganics presented in Table 5, the maximum concentration of beryllium and thallium (i.e., 8.8 µg/l and 8.5 µg/l, respectively) exceed their respective MCLs (i.e., 4 and 2,

respectively). The MCL exceedances are designated in the "Max" column in Table 5 with a superscript letter "a." These exceedances are discussed further in Section 6.0, but it should be noted that the thallium concentration is "K" flagged, indicating that it is biased high. In addition, use of the direct-push sampling technique to collect the groundwater sample likely resulted in an overestimation of metals concentrations due to the sample's high turbidity.

The maximum concentrations of seven inorganics (i.e., aluminum, arsenic, barium, beryllium, iron, manganese, and thallium) exceed their respective tap water RBCs at an HQ of 0.1. These exceedances are designated in the "Max" column of Table 5 with a superscript letter "b."

Soil

The maximum concentration of each detected constituent is compared to its residential RBC at an HQ of 0.1.

None of the VOCs or SVOCs detected in confirmatory soil samples exceeds its respective residential RBC at an HQ of 0.1. The maximum concentrations of four inorganic constituents (i.e., antimony, arsenic, iron, and manganese) exceed their respective RBCs at an HQ of 0.1. These exceedances are designated in the "Max" column in Table 6 with a superscript letter "a."

2. For each constituent whose concentration exceeds its RBC at an HQ of 0.1, an apparent hazard index (AHI) is calculated by dividing the constituent concentration by the RBC at an HQ of 1.

   Groundwater

   For each of the ten constituents in groundwater listed in Step 1 for SWMU 37B, an AHI was calculated and is shown in the adjacent "AHI" column of Table 5.

   Soil

   For each of the four constituents listed in Step 1 for SWMU 37B soil, an AHI was calculated and is shown in the adjacent "AHI" column of Table 6.

3. Following this calculation, the individual AHIs for non-cancer and cancer risks are summed separately and designated the "Cumulative AHI," or "CAHI." The CAHI for cancer risk is then multiplied by 10^{-6}. If the CAHI for the non-cancer risk is less than the screening criterion of 1 and the CAHI for cancer risk is less than the screening criterion of 1×10^{-6}, no potential constituents of concern (PCOCs) are identified and the screening process advances to Step 6. If one or both criteria are exceeded, the screening process advances to Step 4.

   Groundwater

   The calculated CAHIs for non-cancer (i.e., aluminum, arsenic, barium, beryllium, iron, manganese, and thallium) and cancer risk (i.e., 1,1,-DCE, TCE, PCE and arsenic) for groundwater are presented below the AHI column in Table 5. The non-cancer risk CAHI (i.e., 6.6) and cancer risk (i.e., 966×10^{-6}) both exceed their respective screening criterion. These exceedances are designated in the "Max" column of Table 5 with a superscript letter "c."

Soil

The calculated CAHIs for non-cancer (i.e., antimony, arsenic, iron, and manganese) and cancer risk (i.e., arsenic) for soil are presented below the AHI column in Table 6. The non-cancer risk CAHI (i.e., 2.69) and cancer risk (i.e., 18.4×10^{-6}) both exceed their respective screening criterion. These exceedances are designated in the "Max" column of Table 6 with a superscript letter "c."

4. For each AHI group that exceeds (i.e., non-cancer and/or cancer risks), the mean SWMU concentration of each AHI constituent is calculated and these means are compared to the mean facility background concentrations. Also, the maximum constituent concentration is compared to the maximum background concentration for each of these constituents. If the maximum constituent concentration is greater than the maximum background concentration, then the constituent is retained as a PCOC and the screening process advances to Step 5. If not, the constituent is no longer considered a PCOC from a RBC standpoint and the screening process advances to Step 6.

   Groundwater

   For groundwater, the SWMU constituent concentrations were compared to the maximum concentrations in alluvial monitoring well GGW07. None of the three VOCs from Step 3 were detected in well GGW07; therefore, these three VOCs are retained as PCOCs for Step 5.

   The maximum concentrations of aluminum, iron, manganese, and thallium are below their respective facility background concentrations and are, therefore, not considered PCOCs. This is designated in the "PCOC?" column of Table 5 with a superscript letter "d." The concentrations of barium and beryllium are greater than their respective facility background concentrations. The arsenic concentration is just above the facility background concentration, but the SWMU concentration is qualified as being biased high. However, to be conservative, it is further screened in Step 5 with barium and beryllium.

   Soil

   For the non-cancer risk CAHI components, the mean concentrations of only antimony and manganese exceed their mean background concentrations. However, the maximum concentration of only antimony exceeds the maximum facility background concentration. Therefore, antimony is the only non-cancer risk PCOC identified for the soil at SWMU 37B. The remaining non-cancer risk CAHI components are eliminated as PCOCs. This is designated in the "PCOC?" column of Table 6 with a superscript letter "e."

   The mean and maximum concentrations of arsenic are less than the mean and maximum facility background concentrations. Therefore, no cancer risk PCOCs are identified for the soil at SWMU 37B.

5. For all constituents considered PCOCs, the CAHIs for non-cancer and cancer risks are recalculated separately. If the recalculated non-cancer CAHI is less than 1, the constituents included in the CAHI calculation are no longer considered PCOCs. If the recalculated cancer CAHI is in the acceptable risk range of 10^{-4} to 10^{-6}, the constituents included in the CAHI calculation are no longer considered PCOCs. If no PCOCs are retained, the screening process advances to Step 6. If PCOCs are retained, further evaluation of the data by the RPMs is necessary (Step 7) and the screening process advances to Step 6.

Groundwater

The recalculated non-cancer CAHI (0.8) comprises the AHIs for arsenic, barium, and beryllium. The recalculated non-cancer CAHI is less than the screening criterion and, therefore, these constituents are eliminated as PCOCs. This is designated in the "PCOC?" column of Table 5 with a superscript letter "e."

The recalculated cancer risk CAHI (9.7×10^{-4}) comprises the AHIs for 1,1,-DCE, TCE, PCE and arsenic. Because this value is above 10^{-4}, these constituents are retained as PCOCs from an RBC standpoint.

Soil

The recalculated non-cancer risk CAHI (0.24) comprises the AHI for antimony alone and is below the screening value of 1. Therefore, antimony is eliminated as a PCOC from an RBC standpoint.

6. For each detected constituent in soil, the maximum concentration is compared to the soil screening level (SSL) at a dilution attenuation factor (DAF) of 20. If the maximum constituent concentration exceeds the SSL and the maximum facility background concentration, the constituent may be considered a PCOC and the screening process advances to Step 7.

   Soil

   As shown in Table 6, none of the constituents detected in SWMU 37B soil exceeds both the maximum facility background concentration and the SSL at a DAF of 20. Therefore, no PCOCs are identified from a potential leaching standpoint.

7. The RPMs then review the screening results and make a decision on final closure.

   This step is summarized in Section 6.0 of this closeout document.

The State of West Virginia has regulations regarding TPH in soil and groundwater and the screening process for TPH data is different from the general screening process enumerated above. The regulations define three levels of TPH for which some action must take place: (1) Notification Level; (2) Action Level; and (3) Cleanup Level. For SWMU/AOC samples, the general TPH screening process is as follows:

1. **Notification Level** – the concentration at which the data must be reported to the State

There is no minimum detection level of TPH at which the State must be notified. Compare the detection results to the action level in Step 2.

2. **Action Level** – the concentration above which the data must be evaluated by the State to determine whether cleanup is necessary.

The TPH Action Levels are 50 mg/kg (TPH-GRO) and 100 mg/kg (TPH-DRO).

3. **Cleanup Level** – the concentration above which the medium must be "cleaned" (e.g., removed, remediated)

The cleanup levels in both soil and groundwater are SWMU-specific. This is interpreted to mean that, based on an evaluation of each particular SWMU and its current and potential future

uses, the nature and status of the contaminant source, and the probable receptors, the cleanup level will be established by the State.

With respect to SWMU 37B, the RPMs concurred that TPH levels up to three times the WVDEP action level in soil (i.e., approximately 300 mg/kg TPH-DRO and 150 mg/kg TPH-GRO) could remain in soil without further remedial action. This conclusion was reached because the SWMU was small in size, has been removed, and the residual TPH in soil is not readily available for exposure (i.e., is at depth).

The screening processes employ several rules for data reporting. These rules are:

1. If all the data for a particular constituent are non-detect (i.e., "U" flagged), the constituent is not considered further in the screening process.
2. For constituent data that are "B" flagged, the "B" flagged data are used for maximum and mean reporting unless there are duplicate data that are not "B" flagged.
3. For constituent data that are "R" flagged, the "R" flagged data are used for maximum and mean reporting unless there are duplicate data that are not "R" or "B" flagged.
4. For duplicate samples, the mean of the duplicate samples are used in the mean computation for the sample set.

5.0 Constituent Migration Pathways and Receptors

Exposure to constituents occurs when contaminated media are accessible to receptors via an exposure pathway. An exposure pathway is a description of the means by which a chemical moves from a source to a receptor. For a complete exposure pathway to exist five elements must be present:

- A constituent of concern
- A mechanism for constituent release
- An environmental transport medium
- An exposure point (or receptor location)
- A route of intake

The following summary tables were prepared to assist in the risk management decision making process by identifying the pathways of migration and the presence of receptors. An evaluation and discussion of potential risks at the site are presented in Section 6.

5.1 Migration Pathways

Based on site history and evaluation, analytical data, and professional judgment, the following pathway scenario is predicted for potential constituents at the site:

Pathway	Evident	Potential	Confirmed	Not Applicable
Groundwater		X		
Surface water/ Sediment				X
Subsurface and Surface Soil		X		

5.2 Receptors

Based on site history and evaluation, analytical data, and professional judgment, the following receptor scenario is predicted for environmental media at the site:

	Receptors Identified	Potential Receptors	Limited Receptors	Not Applicable
Groundwater			X	
Surface water/ Sediment				X
Subsurface and Surface Soil			X	

6.0 Conclusions

Based upon the information presented herein, three VOCs (i.e, 1,1-DCE, PCE, and TCE) and one inorganic constituent (i.e., arsenic) are identified as PCOCs in SWMU 37B groundwater. Groundwater data were evaluated via a process whereby constituent concentrations are compared to MCLs, RBCs, and background concentrations. The results of this screening process indicate that the cancer risk from four constituents (i.e., 1,1-DCE, TCE, PCE, and arsenic) exceeds the screening criterion. However, it is important to note that constituent concentrations are from a direct-push groundwater sample and, therefore, may overestimate constituent concentrations (especially metals) due to the high turbidity inherent to the direct-push sampling technique. In addition, the background screening comparison uses data from a monitoring well, which generally is not an equitable comparison for direct-push groundwater because of the relatively high turbidity in direct-push samples. In addition, none of the VOCs were detected in the confirmatory soil samples collected at the unit, which suggests the VOC contamination detected in the groundwater below SWMU 37B is likely from another source. As noted above, SWMU 37B is located within an area of contaminated groundwater attributable to the former TCE still at Site 10. Therefore, groundwater contamination at SWMU 37B will be managed in accordance with the Record of Decision for Site 10 groundwater.

Post-removal confirmatory soil data were evaluated via a process whereby constituent concentrations are compared to residential RBCs, SSLs, WVDEP regulations for TPH, and facility background criteria. The results of this screening process indicate that no constituents are present in the soil at SWMU 37B at levels that pose an unacceptable risk to human health. In addition, as noted in Section 4.0, the potential that leaching of soil constituents at SWMU 37B to groundwater will produce unacceptable constituent concentrations is not greater than that for the facility background constituents.

In addition to the absence of unacceptable human-health risks from exposure to soil, the potential risks to the environment at SWMU 37B are considered to be minimal. As shown in Figure 1, the SWMU area is small and the sump and associated soil have been removed. Finally, constituent concentrations remaining in soil and groundwater are below the ground surface and not readily available to biota.

Based upon the above, it is the consensus of the RPMs that soil at SWMU 37B requires no further action under CERCLA for residential land use. It is also the consensus of the RPMs that groundwater contamination detected at SWMU 37B is not attributable to potential releases from the former sump and will be managed in accordance to with the Record of Decision for Site 10 groundwater.

7.0 References

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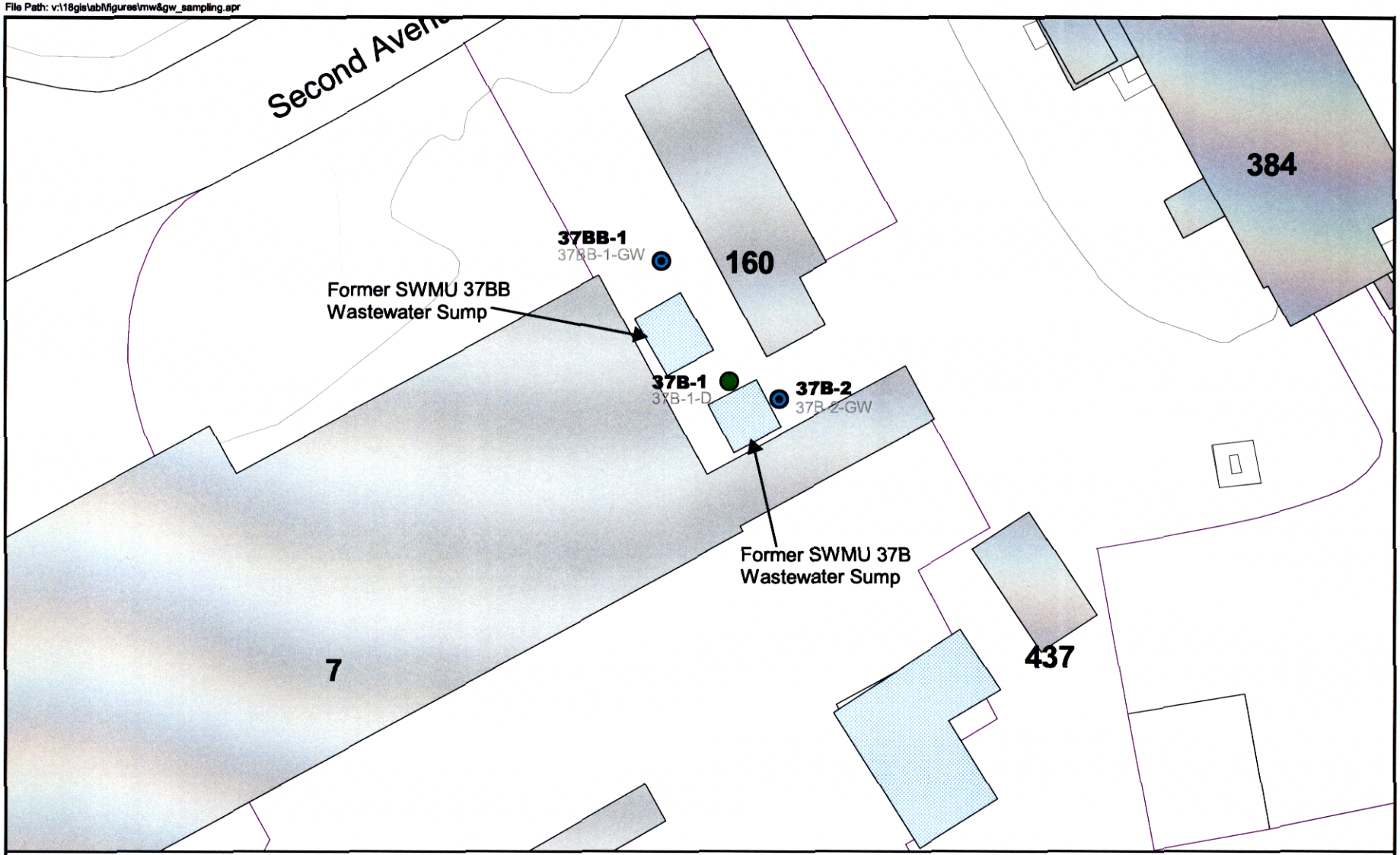

Figure 1

SWMUs 37B/BB SAMPLE LOCATIONS
ALLEGANY BALLISTICS LABORATORY

CH2MHILL

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Table 1 Soil Analytical Results for SWMU 37B (Pre-Removal Action)	
	37B-1-D
Chemical Name	
Volatile Organic Compounds (UG/KG)	
1,1,1-Trichloroethane	13 U
1,1,2,2-Tetrachloroethane	13 U
1,1,2-Trichloroethane	13 U
1,1-Dichloroethane	13 U
1,1-Dichloroethene	13 U
1,2-Dichloroethane	13 U
1,2-Dichloroethene (total)	13 U
1,2-Dichloropropane	13 U
2-Butanone	13 U
2-Hexanone	13 U
4-Methyl-2-pentanone	13 U
Acetone	13 U
Benzene	13 U
Bromodichloromethane	13 U
Bromoform	13 U
Bromomethane	13 U
Carbon disulfide	13 U
Carbon tetrachloride	13 U
Chlorobenzene	13 U
Chloroethane	13 U
Chloroform	13 U
Chloromethane	13 U
Dibromochloromethane	13 U
Ethylbenzene	13 U
Methylene chloride	13 U
Styrene	13 U
Tetrachloroethene	3 J
Toluene	13 U
Trichloroethene	3 J
Vinyl chloride	13 U
Xylene, total	13 U
cis-1,3-Dichloropropene	13 U
Semi-volatile Organic Compounds (UG/KG)	
1,2,4-Trichlorobenzene	430 U
1,2-Dichlorobenzene	430 U
1,3-Dichlorobenzene	430 U
1,4-Dichlorobenzene	430 U
2,2'-Oxybis(1-chloropropane)	430 UJ
2,4,5-Trichlorophenol	1,000 U
2,4,6-Trichlorophenol	430 U
2,4-Dichlorophenol	430 U
2,4-Dimethylphenol	430 U
2,4-Dinitrophenol	1,000 U
2,4-Dinitrotoluene	430 U
2,6-Dinitrotoluene	430 U
2-Chloronaphthalene	430 U
2-Chlorophenol	430 U

Table 1 Soil Analytical Results for SWMU 37B (Pre-Removal Action)	
	37B-1-D
2-Methylnaphthalene	430 U
2-Methylphenol	430 U
2-Nitroaniline	1,000 U
2-Nitrophenol	430 U
3,3'-Dichlorobenzidine	430 U
3-Nitroaniline	1,000 U
4,6-Dinitro-2-methylphenol	1,000 U
4-Bromophenyl-phenylether	430 U
4-Chloro-3-methylphenol	430 U
4-Chloroaniline	430 U
4-Chlorophenyl-phenylether	430 U
4-Methylphenol	430 U
4-Nitroaniline	1,000 U
4-Nitrophenol	1,000 U
Acenaphthene	430 U
Acenaphthylene	430 U
Anthracene	430 U
Benzo(a)anthracene	430 U
Benzo(a)pyrene	430 U
Benzo(b)fluoranthene	430 U
Benzo(g,h,i)perylene	430 U
Benzo(k)fluoranthene	430 U
Butylbenzylphthalate	430 U
Carbazole	430 U
Chrysene	430 U
Di-n-butylphthalate	430 U
Di-n-octylphthalate	430 U
Dibenz(a,h)anthracene	430 U
Dibenzofuran	430 U
Diethylphthalate	430 U
Dimethyl phthalate	430 U
Fluoranthene	430 U
Fluorene	430 U
Hexachlorobenzene	430 U
Hexachlorobutadiene	430 U
Hexachlorocyclopentadiene	430 U
Hexachloroethane	430 U
Indeno(1,2,3-cd)pyrene	430 U
Isophorone	430 U
Naphthalene	430 U
Nitrobenzene	430 U
Pentachlorophenol	1,000 U
Phenanthrene	430 U
Phenol	430 U
Pyrene	430 U
bis(2-Chloroethoxy)methane	430 U
bis(2-Chloroethyl)ether	430 U
bis(2-Ethylhexyl)phthalate	430 U
n-Nitroso-di-n-propylamine	430 U

Table 1 Soil Analytical Results for SWMU 37B (Pre-Removal Action)	
	37B-1-D
n-Nitrosodiphenylamine	430 U
Polychlorinated Biphenyls (UG/KG)	
Aroclor-1016	43 U
Aroclor-1221	87 U
Aroclor-1232	43 U
Aroclor-1242	43 U
Aroclor-1248	43 U
Aroclor-1254	43 U
Aroclor-1260	43 U
Total Metals (MG/KG)	
Aluminum	12,200
Antimony	8.20 B
Arsenic	10.7
Barium	91.1
Beryllium	1.2
Cadmium	0.55 U
Calcium	3,090
Chromium	22.9
Cobalt	19.3
Copper	22.3
Iron	40,800
Lead	21
Magnesium	1,970
Manganese	686
Mercury	0.06 U
Nickel	24.2
Potassium	1,400
Selenium	0.55 U
Silver	1.9
Sodium	74.7 B
Thallium	0.97 B
Vanadium	30.4
Zinc	92.7

B - Analyte not detected substantially above associated blank
J - Reported value is estimated
U - Analyte not detected
UJ - Not detected, quantitation limit is estimated

Table 2 Groundwater Analytical Results for SWMU 37B	37B-2-GW		37B-2-GW/DUP	
Volatile Organic Compounds (UG/L)				
1,1,1-Trichloroethane	13		14	
1,1,2,2-Tetrachloroethane	10	U	10	U
1,1,2-Trichloro-1,2,2- trifluoroethane	10	U	10	U
1,1,2-Trichloroethane	10	U	10	U
1,1-Dichloroethane	2	J	2.1	J
1,1-Dichloroethene	1.4	J	2.3	J
1,2,4-Trichlorobenzene	10	U	10	U
1,2-Dibromo-3-chloropropane	10	R	10	R
1,2-Dibromoethane	10	U	10	U
1,2-Dichlorobenzene	10	U	10	U
1,2-Dichloroethane	10	U	10	U
1,2-Dichloropropane	10	U	10	U
1,3-Dichlorobenzene	10	U	10	U
1,4-Dichlorobenzene	10	U	10	U
2-Butanone	10	U	10	U
2-Hexanone	10	U	10	U
4-Methyl-2-pentanone	10	U	10	U
Acetone	1.7	J	1.6	J
Benzene	10	U	10	U
Bromodichloromethane	10	U	10	U
Bromoform	10	U	10	U
Bromomethane	10	U	10	U
Carbon disulfide	10	U	10	U
Carbon tetrachloride	10	U	10	U
Chlorobenzene	10	U	10	U
Chloroethane	10	U	10	U
Chloroform	10	U	10	U
Chloromethane	10	U	10	U
Cumene	10	U	10	U
Cyclohexane	10	U	10	U
Dibromochloromethane	10	U	10	U
Dichlorodifluoromethane	10	U	10	U
Ethylbenzene	10	U	10	U
Methyl acetate	10	U	10	U
Methyl-tert-butyl ether (MTBE)	10	U	10	U
Methylcyclohexane	10	U	10	U
Methylene chloride	3.7	B	3.6	B
Styrene	10	U	10	U
Tetrachloroethene	2.3	J	2.7	J
Toluene	10	U	10	U
Trichloroethene	20		21	
Trichlorofluoromethane	10	U	10	U
Vinyl chloride	10	U	10	U
Xylene, total	10	U	10	U
cis-1,2-Dichloroethene	1.1	J	1.1	J
cis-1,3-Dichloropropene	10	U	10	U
trans-1,2-Dichloroethene	10	U	10	U
trans-1,3-Dichloropropene	10	U	10	U
Semi-volatile Organic Compounds (UG/L)				
1,1-Biphenyl	10	U	10	R
2,2'-Oxybis(1-chloropropane)	10	U	10	R
2,4,5-Trichlorophenol	25	UL	25	R

NS - Not sampled
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
R - Unreliable result

Table 2 Groundwater Analytical Results for SWMU 37B				
	37B-2-GW		37B-2-GW/DUP	
2,4,6-Trichlorophenol	10	UL	10	R
2,4-Dichlorophenol	10	UL	10	R
2,4-Dimethylphenol	10	UL	10	R
2,4-Dinitrophenol	25	UL	25	R
2,4-Dinitrotoluene	10	U	10	R
2,6-Dinitrotoluene	10	U	10	R
2-Chloronaphthalene	10	U	10	R
2-Chlorophenol	10	UL	10	R
2-Methylnaphthalene	10	U	10	R
2-Methylphenol	10	UL	10	R
2-Nitroaniline	25	U	25	R
2-Nitrophenol	10	UL	10	R
3,3'-Dichlorobenzidine	10	U	10	R
3-Nitroaniline	25	U	25	R
4,6-Dinitro-2-methylphenol	25	UL	25	R
4-Bromophenyl-phenylether	10	U	10	R
4-Chloro-3-methylphenol	10	UL	10	R
4-Chloroaniline	10	R	10	R
4-Chlorophenyl-phenylether	10	U	10	R
4-Methylphenol	10	UL	10	R
4-Nitroaniline	25	U	25	R
4-Nitrophenol	25	UL	25	R
Acenaphthene	10	U	10	R
Acenaphthylene	10	U	10	R
Acetophenone	10	U	10	R
Anthracene	10	U	10	R
Atrazine	10	U	10	R
Benzaldehyde	10	U	10	R
Benzo(a)anthracene	10	U	10	R
Benzo(a)pyrene	10	U	10	R
Benzo(b)fluoranthene	10	U	10	R
Benzo(g,h,i)perylene	10	U	10	R
Benzo(k)fluoranthene	10	U	10	R
Butylbenzylphthalate	10	U	10	R
Caprolactam	10	U	10	R
Carbazole	10	U	10	R
Chrysene	10	U	10	R
Di-n-butylphthalate	10	U	10	R
Di-n-octylphthalate	10	U	10	R
Dibenz(a,h)anthracene	10	U	10	R
Dibenzofuran	10	U	10	R
Diethylphthalate	10	U	10	R
Dimethyl phthalate	10	U	10	R
Fluoranthene	10	U	10	R
Fluorene	10	U	10	R
Hexachlorobenzene	10	U	10	R
Hexachlorobutadiene	10	U	10	R
Hexachlorocyclopentadiene	10	U	10	R
Hexachloroethane	10	U	10	R
Indeno(1,2,3-cd)pyrene	10	U	10	R
Isophorone	10	U	10	R
Naphthalene	10	U	10	R
Nitrobenzene	10	U	10	R
Pentachlorophenol	25	UL	25	R

NS - Not sampled
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
R - Unreliable result

Table 2 Groundwater Analytical Results for SWMU 37B				
	37B-2-GW		37B-2-GW/DUP	
Phenanthrene	10	U	10	R
Phenol	10	UL	10	R
Pyrene	10	U	10	R
bis(2-Chloroethoxy)methane	10	U	10	R
bis(2-Chloroethyl)ether	10	U	10	R
bis(2-Ethylhexyl)phthalate	2	B	10	R
n-Nitroso-di-n-propylamine	10	U	10	R
n-Nitrosodiphenylamine	10	U	10	R
Pesticide/Polychlorinated Biphenyls (UG/L)				
4,4'-DDD	0.02	U	0.02	U
4,4'-DDE	0.02	U	0.02	U
4,4'-DDT	0.02	U	0.02	U
Aldrin	0.01	U	0.01	U
Aroclor-1016	0.2	U	0.2	U
Aroclor-1221	0.4	U	0.4	U
Aroclor-1232	0.2	U	0.2	U
Aroclor-1242	0.2	U	0.2	U
Aroclor-1248	0.2	U	0.2	U
Aroclor-1254	0.2	U	0.2	U
Aroclor-1260	0.2	U	0.2	U
Dieldrin	0.02	U	0.02	U
Endosulfan I	0.01	U	0.01	U
Endosulfan II	0.02	U	0.02	U
Endosulfan sulfate	0.02	U	0.02	U
Endrin	0.02	U	0.02	U
Endrin aldehyde	0.02	U	0.02	U
Endrin ketone	0.02	U	0.02	U
Heptachlor	0.01	U	0.01	U
Heptachlor epoxide	0.01	U	0.01	U
Methoxychlor	0.1	U	0.1	U
Toxaphene	1	U	1	U
alpha-BHC	0.01	U	0.01	U
alpha-Chlordane	0.01	U	0.01	U
beta-BHC	0.01	U	0.01	U
delta-BHC	0.01	U	0.01	U
gamma-BHC (Lindane)	0.01	U	0.01	U
gamma-Chlordane	0.01	U	0.01	U
Total Metals (UG/L)				
Aluminum	9,600	J	N/A	
Antimony	4.3	U	N/A	
Arsenic	4.6	K	N/A	
Barium	677		N/A	
Beryllium	8.8		N/A	
Cadmium	1.4	J	N/A	
Calcium	136,000		N/A	
Chromium	6.8	J	N/A	
Cobalt	28	J	N/A	
Copper	40.8		N/A	
Cyanide	1.6	B	N/A	
Iron	2,000	J	N/A	
Lead	4.9	B	N/A	
Magnesium	12,800		N/A	

NS - Not sampled
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
R - Unreliable result

Table 2				
Groundwater Analytical Results for SWMU 37B				
	37B-2-GW		37B-2-GW/DUP	
Manganese	1,540		N/A	
Mercury	0.1	UL	N/A	
Nickel	65.7		N/A	
Potassium	2,570	J	N/A	
Selenium	4.3	U	N/A	
Silver	3.1	U	N/A	
Sodium	20,600		N/A	
Thallium	8.5	K	N/A	
Vanadium	2.9	J	N/A	
Zinc	177		N/A	
Total Petroleum Hydrocarbons (UG/L)				
TPH-gas range	100	U	N/A	
TPH-diesel range	100	U	N/A	
B - Analyte not detected substantially above associated blank				
J - Reported value is estimated				
U - Analyte not detected				
R - Result rejected by data validator				
K - Result biased high				
UJ - Not detected, quantitation limit may be inaccurate				
UL - Not detected, quantitation limit biased low				
N/A - Not Applicable				

NS - Not sampled
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
R - Unreliable result

Table 3 Waste Characterization Analytical Results for SWMU 37B		
Sample Date	37B-IW-01 10/03/00	
Chemical Name		
TCLP Volatile Organic Compounds (MG/L)		
1,1-Dichloroethene	0.1	U
1,2-Dichloroethane	0.1	U
2-Butanone	0.2	U
Benzene	0.1	U
Carbon tetrachloride	0.1	U
Chlorobenzene	0.1	U
Chloroform	0.1	U
Tetrachloroethene	0.1	U
Trichloroethene	0.1	U
Vinyl chloride	0.1	U
TCLP Semi-volatile Organic Compounds (MG/L)		
1,4-Dichlorobenzene	0.05	U
2,4,5-Trichlorophenol	0.05	U
2,4,6-Trichlorophenol	0.05	U
2,4-Dinitrotoluene	0.05	U
Hexachlorobenzene	0.05	U
Hexachlorobutadiene	0.05	U
Hexachloroethane	0.05	U
Nitrobenzene	0.05	U
Pentachlorophenol	0.05	U
Pyridine	0.05	U
Total cresols	0.05	U
TCLP Pesticides/PCBs (MG/L)		
Chlordane	0.03	U
Endrin	0.006	U
Heptachlor	0.003	U
Heptachlor epoxide	0.003	U
Methoxychlor	0.04	U
Toxaphene	0.05	U
gamma-BHC (Lindane)	0.003	U
TCLP Herbicides (MG/L)		
2,4,5-TP (Silvex)	0.01	U
2,4-D	0.01	U
TCLP Metals (MG/L)		
Arsenic	0.75	U
Barium	0.15	U
Cadmium	0.15	U
Chromium	0.75	U
Lead	0.75	U
Mercury	0.002	U
Selenium	0.75	U
Silver	0.75	U
Ignitability		
Not ignitable		
Reactivity (MG/L)		
Reactive cyanide	250	U
Reactive sulfide	500	U
Corrosivity (pH Units)	7.51	
U - Analyte not detected		

NA - Not analyzed
U - Analyte not detected

Table 4
Soil Analytical Results for SWMU 37B (Post-Removal Action)

Sample Date	37B-SB-E01 11/08/2000	37B-SB-F01 11/08/2000	37B-SB-N01 11/08/2000	37B-SB-N01P 11/08/2000	37B-SB-S01 11/08/2000	37B-SB-W01 11/08/2000
Chemical Name						
Volatile Organic Compounds (ug/kg)						
1,1,1-Trichloroethane	12 U	12 U	13 U	13 U	12 U	13 U
1,1,2,2-Tetrachloroethane	12 U	12 U	13 U	13 U	12 U	13 U
1,1,2-Trichloro-1,2,2- trifluoroethane	12 U	12 U	13 U	13 U	12 U	13 U
1,1,2-Trichloroethane	12 U	12 U	13 U	13 U	12 U	13 U
1,1-Dichloroethane	12 U	12 U	13 U	13 U	12 U	13 U
1,1-Dichloroethene	12 U	12 U	13 U	13 U	12 U	13 U
1,2,4-Trichlorobenzene	12 U	12 U	13 U	13 U	12 U	13 U
1,2-Dibromo-3-chloropropane	12 U	12 U	13 U	13 U	12 U	13 U
1,2-Dibromoethane	12 U	12 U	13 U	13 U	12 U	13 U
1,2-Dichlorobenzene	12 U	12 U	13 U	13 U	12 U	13 U
1,2-Dichloroethane	12 U	12 U	13 U	13 U	12 U	13 U
1,2-Dichloropropane	12 U	12 U	13 U	13 U	12 U	13 U
1,3-Dichlorobenzene	12 U	12 U	13 U	13 U	12 U	13 U
1,4-Dichlorobenzene	12 U	12 U	13 U	13 U	12 U	13 U
2-Butanone	12 U	12 U	13 U	9 J	12 U	13 U
2-Hexanone	12 U	12 U	13 U	13 U	12 U	13 U
4-Methyl-2-pentanone	12 U	12 U	13 U	13 U	12 U	13 U
Acetone	12 U	9 B	13 UJ	97 J	12 U	12 B
Benzene	12 U	12 U	13 U	13 U	12 U	13 U
Bromodichloromethane	12 U	12 U	13 U	13 U	12 U	13 U
Bromoform	12 U	12 U	13 U	13 U	12 U	13 U
Bromomethane	12 U	12 U	13 U	13 U	12 U	13 U
Carbon disulfide	12 U	12 U	13 U	13 U	12 U	13 U
Carbon tetrachloride	12 U	12 U	13 U	13 U	12 U	13 U
Chlorobenzene	12 U	12 U	13 U	13 U	12 U	13 U
Chloroethane	12 U	12 U	13 U	13 U	12 U	13 U
Chloroform	12 U	12 U	13 U	13 U	12 U	13 U
Chloromethane	12 U	12 U	13 U	13 U	12 U	13 U
cis-1,2-Dichloroethene	12 U	12 U	13 U	13 U	12 U	13 U
cis-1,3-Dichloropropene	12 U	12 U	13 U	13 U	12 U	13 U
Cumene	12 U	4 J	13 U	13 U	12 U	13 U
Cyclohexane	12 U	12 U	13 U	13 U	12 U	13 U
Dibromochloromethane	12 U	12 U	13 U	13 U	12 U	13 U
Dichlorodifluoromethane	12 U	12 U	13 U	13 U	12 U	13 U
Ethylbenzene	12 U	2 J	13 U	13 U	12 U	13 U
m- and p-Xylene	12 U	2 J	13 U	13 U	12 U	13 U
Methyl acetate	12 U	12 U	13 U	13 U	12 U	13 U
Methylcyclohexane	12 U	6 J	13 U	13 U	12 U	13 U
Methylene chloride	12 U	12 U	13 U	13 U	12 U	13 U
Methyl-tert-butyl ether (MTBE)	12 U	12 U	13 U	13 U	12 U	13 U
o-Xylene	12 U	12 U	13 U	13 U	12 U	13 U
Styrene	12 U	12 U	13 U	13 U	12 U	13 U
Tetrachloroethene	12 U	12 U	13 U	13 U	12 U	13 U
Toluene	12 U	12 U	13 U	13 U	12 U	13 U
trans-1,2-Dichloroethene	12 U	12 U	13 U	13 U	12 U	13 U
trans-1,3-Dichloropropene	12 U	12 U	13 U	13 U	12 U	13 U
Trichloroethene	12 U	12 U	13 U	13 U	12 U	13 U
Trichlorofluoromethane	12 U	12 U	13 U	13 U	12 U	13 U
Vinyl chloride	12 U	12 U	13 U	13 U	12 U	13 U
Semi-volatile Organic Compounds (ug/kg)						
1,1-Biphenyl	398 U	400 U	436 U	430 U	399 U	438 UL
1,2,4-Trichlorobenzene	398 U	400 U	436 U	430 U	399 U	438 UL
1,2-Dichlorobenzene	398 U	400 U	436 U	430 U	399 U	438 UL
1,3-Dichlorobenzene	398 U	400 U	436 U	430 U	399 U	438 UL
1,4-Dichlorobenzene	398 U	400 U	436 U	430 U	399 U	438 UL
2,4,5-Trichlorophenol	1000 U	1000 U	1100 U	1080 U	1000 U	1100 U
2,4,6-Trichlorophenol	398 U	400 U	436 U	430 U	399 U	438 U
2,4-Dichlorophenol	398 U	400 U	436 U	430 U	399 U	438 U
2,4-Dimethylphenol	398 U	400 U	436 U	430 U	399 U	438 U
2,4-Dinitrophenol	1000 U	1000 U	1100 U	1,080 R	1000 U	1,100 R
2-Chloronaphthalene	398 U	400 U	436 U	430 U	399 U	438 UL
2-Chlorophenol	398 U	400 U	436 U	430 U	399 U	438 U
2-Methylnaphthalene	398 U	400 U	436 U	430 U	399 U	438 UL
2-Methylphenol	398 U	400 U	436 U	430 U	399 U	438 U
2-Nitroaniline	1000 U	1000 U	1100 U	1080 U	1000 U	1100 UL
2-Nitrophenol	398 U	400 U	436 U	430 U	399 U	438 U
2,4-Dinitrotoluene	398 U	400 U	436 U	430 U	399 U	438 UL
2,6-Dinitrotoluene	398 U	400 U	436 U	430 U	399 U	438 UL
3,3'-Dichlorobenzidine	398 U	400 U	436 U	430 U	399 U	438 UL
3-Nitroaniline	1000 U	1000 U	1100 U	1080 U	1000 U	1100 UL
4,6-Dinitro-2-methylphenol	1000 U	1000 U	1100 U	1,080 R	1000 U	1,100 R

NA - Not analyzed

Table 4
Soil Analytical Results for SWMU 37B (Post-Removal Action)

Sample Date	37B-SB-E01 11/08/2000	37B-SB-F01 11/08/2000	37B-SB-N01 11/08/2000	37B-SB-N01P 11/08/2000	37B-SB-S01 11/08/2000	37B-SB-W01 11/08/2000
Chemical Name						
4-Bromophenyl-phenylether	398 U	400 U	436 U	430 U	399 U	438 UL
4-Chloro-3-methylphenol	398 U	400 U	436 U	430 U	399 U	438 U
4-Chloroaniline	398 U	400 U	436 U	430 U	399 U	438 UL
4-Chlorophenyl-phenylether	398 U	400 U	436 U	430 U	399 U	438 UL
4-Methylphenol	398 U	400 U	436 U	430 U	399 U	438 U
4-Nitroaniline	1000 U	1000 U	1100 U	1080 U	1000 U	1100 UL
4-Nitrophenol	1000 U	1000 U	1100 U	1080 U	1000 U	1100 U
Acenaphthene	398 U	400 U	436 U	430 U	399 U	438 UL
Acenaphthylene	398 U	400 U	436 U	430 U	399 U	438 UL
Acetophenone	398 U	400 U	436 U	430 U	399 U	438 UL
Anthracene	398 U	400 U	436 U	430 U	399 U	438 UL
Atrazine	398 U	400 U	436 U	430 R	399 U	438 R
Benzaldehyde	398 U	400 U	436 U	430 U	399 U	438 UL
Benzo(a)anthracene	398 U	400 U	436 U	430 U	52.1 J	438 UL
Benzo(a)pyrene	398 U	400 U	436 U	430 U	50.6 J	438 UL
Benzo(b)fluoranthene	398 U	400 U	436 U	430 U	55.9 J	438 UL
Benzo(g,h,i)perylene	398 U	400 U	436 U	430 U	399 U	438 UL
Benzo(k)fluoranthene	398 U	400 U	436 U	430 U	51 J	438 UL
bis(2-Chloroethoxy)methane	398 U	400 U	436 U	430 U	399 U	438 UL
bis(2-Chloroethyl)ether	398 U	400 U	436 U	430 U	399 U	438 UL
bis(2-Chloroisopropyl)ether	398 U	400 U	436 U	430 U	399 U	438 UL
bis(2-Ethylhexyl)phthalate	398 U	56.1 B	436 U	430 U	399 U	438 UL
Butylbenzylphthalate	398 U	400 U	436 U	430 U	399 U	438 UL
Caprolatam	398 U	400 U	436 U	430 U	399 U	438 UL
Carbazole	398 U	400 U	436 U	430 U	399 U	438 UL
Chrysene	398 U	400 U	436 U	430 U	72 J	438 UL
Dibenz(a,h)anthracene	398 U	400 U	436 U	430 U	399 U	438 UL
Dibenzofuran	398 U	400 U	436 U	430 U	399 U	438 UL
Diethylphthalate	398 U	400 U	436 U	430 U	399 U	438 UL
Dimethyl phthalate	398 U	400 U	436 U	430 U	399 U	438 UL
Di-n-butylphthalate	398 U	400 U	436 U	430 U	399 U	438 UL
Di-n-octylphthalate	398 U	400 U	436 U	430 U	399 U	438 UL
Fluoranthene	398 U	400 U	436 U	430 U	127 J	438 UL
Fluorene	398 U	400 U	436 U	430 U	399 U	438 UL
Hexachlorobenzene	398 U	400 U	436 U	430 U	399 U	438 UL
Hexachlorobutadiene	398 U	400 U	436 U	430 U	399 U	438 UL
Hexachlorocyclopentadiene	398 U	400 U	436 U	430 U	399 U	438 UL
Hexachloroethane	398 U	400 U	436 U	430 U	399 U	438 UL
Indeno(1,2,3-cd)pyrene	398 U	400 U	436 U	430 U	399 U	438 UL
Isophorone	398 U	400 U	436 U	430 U	399 U	438 UL
Naphthalene	398 U	400 U	436 U	430 U	399 U	438 UL
Nitrobenzene	398 U	400 U	436 U	430 U	399 U	438 UL
n-Nitroso-di-n-propylamine	398 U	400 U	436 U	430 U	399 U	438 UL
n-Nitrosodiphenylamine	398 U	400 U	436 U	430 U	399 U	438 UL
Pentachlorophenol	1000 U	1000 U	1100 U	1080 U	1000 U	1100 U
Phenanthrene	398 U	400 U	436 U	430 U	75.3 J	438 UL
Phenol	398 U	400 U	436 U	430 U	399 U	438 U
Pyrene	398 U	400 U	436 U	430 U	106 J	438 UL
Polychlorinated Biphenyls (ug/kg)						
Aroclor-1016	40 U	40 U	44 U	43 U	40 U	44 U
Aroclor-1221	81 U	81 U	89 U	87 U	81 U	89 U
Aroclor-1232	40 U	40 U	44 U	43 U	40 U	44 U
Aroclor-1242	40 U	40 U	44 U	43 U	40 U	44 U
Aroclor-1248	40 U	40 U	44 U	43 U	40 U	44 U
Aroclor-1254	40 U	40 U	44 U	43 U	40 U	44 U
Aroclor-1260	40 U	40 U	44 U	43 U	40 U	44 U
Explosives (mg/kg)						
2,4,6-Trinitrotoluene	0.1 U	0.1 U	0.1 U	0.099 U	0.099 U	N/A
HMX	0.1 U	0.1 U	0.1 U	0.099 U	0.099 U	N/A
Nitroglycerin	5 U	5 U	5 U	5 U	5 U	N/A
PETN	1 U	1 U	1 U	1 U	1 U	N/A
RDX	0.1 U	0.1 U	0.1 U	0.099 U	0.099 U	N/A
Total Metals (mg/kg)						
Aluminum	7,750	4,470	7,070	4,970	7,960	5,890
Antimony	2.1 UL	7.4 L	2.3 UL	2.3 UL	2.2 L	2.3 UL
Arsenic	3.7 L	1.4 L	4.3	7	7.2 L	7.9
Barium	88.5	51.6	95.3	107	126	130
Beryllium	0.68 J	0.56 J	0.81 J	0.89 J	0.73 J	1.1 J
Cadmium	0.47 J	0.66 J	0.31 J	0.4 J	0.68 J	0.27 U
Calcium	113,000	272,000	87,300	64,000	103,000	3,650

NA - Not analyzed

Table 4
Soil Analytical Results for SWMU 37B (Post-Removal Action)

Sample Date	37B-SB-E01 11/08/2000	37B-SB-F01 11/08/2000	37B-SB-N01 11/08/2000	37B-SB-N01P 11/08/2000	37B-SB-S01 11/08/2000	37B-SB-W01 11/08/2000
Chemical Name						
Chromium	11	7.1	11	11.7	15.7	13
Cobalt	17.2	6.7 J	13.4	15.6	16.2	18.7
Copper	19.6	18.1	16.5	17	20.2	20.3
Iron	22,700	12,500	22,200	27,600	26,400	31,400
Lead	15.3	36.2	17.1	21.4	48.4	20.3
Magnesium	16,200	27,600	12,900	5,070	18,800	1,430
Manganese	846 L	425 L	389	974	773 L	1,190
Mercury	0.03 J	0.06 J	0.05 J	0.04 J	0.05 J	0.05 J
Nickel	27.5	11.9	19.2	21.3	25.4	24.6
Potassium	952 J	811 J	687 J	941 J	914 J	794 J
Selenium	0.65 L	0.66 L	0.62 L	1.1 L	0.22 L	0.21 L
Silver	1.7 U	1.7 U	0.2 U	0.19 U	1.7 U	0.2 U
Sodium	1,030 J	1,150 J	1,160 J	1,030 J	1,040 J	975 J
Thallium	0.52 U	0.51 U	0.56 UL	0.55 UL	0.5 U	0.58 U
Vanadium	19.5	11.8	18.6	21.3	18	24.5
Zinc	63.9	43.2	54.1	64.4	83.4	71.8
Wet Chemistry (mg/kg)						
Cyanide	1.2 U	1.21 U	1.32 U	1.3 U	1.21 U	1.33 U
Total Petroleum Hydrocarbons (mg/kg)						
TPH-diesel range	8.8	220	7.4 J	100 J	8.6	2.7 U
TPH-gas range	0.54 U	54	0.66 UJ	3.2 J	0.61 U	0.67 U

B - Analyte not detected substantially above associated blank
J - Reported value is estimated
U - Analyte not detected
R - Result rejected by data validator
L - Biased low
UL - Not detected, quantitation limit biased low
N/A - Not Applicable

NA - Not analyzed

Table 5
Screening Comparison for SWMU 37B Groundwater

		Background Groundwater (GGW07)	Tapwater RBC (HQ=0.1)	USEPA MCL	SWMU Samples Groundwater Max (Steps 1, 4, 6)	SWMU Samples Groundwater AHI (Step 2)	SWMU Samples Groundwater PCOC? (Steps 4, 5)
Volatile Organic Compounds (ug/l)							
1,1,1-Trichloroethane		ND	320	200	14		
1,1-Dichloroethane		ND	80	N/A	2.1		
1,1-Dichloroethene (C)		ND	0.044	7	2.3[bc]	52.3	Yes
Acetone		ND	61	N/A	1.7		
Methylene Chloride (C)		ND	4.1	N/A	**3.7**		
Tetrachloroethene (C)		ND	0.63	5	2.7[bc]	4.3	Yes
Trichloroethene (C)		ND	0.026	5	21[abc]	808	Yes
cis-1,2-Dichloroethene		ND	5.5	70	1.1		
Semi-volatile Organic Compounds (ug/l)							
bis(2-Ethylhexyl)phthalate		N/A	4.8	6	**2**		
Pesticide/Polychlorinated Biphenyls (ug/l)							
No Detections							
Total Petroleum Hydrocarbons (ug/l)							
No Detections							
Total Metals (ug/l)							
Aluminum	(Al)	46,800	3,700	N/A	9,600[bc]	0.26	No[d]
Arsenic (C)	(As)	**4.1**	0.045	5	*4.6*[bc]	102	Yes
Arsenic (N)	(As)	**4.1**	1.10	5	*4.6*[bc]	0.42	No[e]
Barium	(Ba)	453	260	2,000	677[bc]	0.26	No[e]
Beryllium	(Be)	2.9	7.3	4	8.8[abc]	0.12	No[e]
Cadmium	(Cd)	2.7 U	1.8	5	1.4		
Calcium	(Ca)	21,000	N/A	N/A	136,000		
Chromium	(Cr)	57.1	11	100	6.8		
Cobalt	(Co)	94	73	N/A	28		
Copper	(Cu)	61	150	1,300	40.8		
Cyanide	(Cy)	N/A	73	200	**1.6**		
Iron	(Fe)	70,400	1,100	N/A	2,000[bc]	0.18	No[d]
Lead	(Pb)	44.6	N/A	15	**4.9**		
Magnesium	(Mg)	9,980	N/A	N/A	12,800		
Manganese	(Mn)	3,530	73	N/A	1,540[bc]	2.1	No[d]
Nickel	(Ni)	73	73	N/A	65.7		
Potassium	(K)	8,000	N/A	N/A	2,570		
Sodium	(Na)	5,660	N/A	N/A	20,600		
Thallium	(Tl)	**20.6**	0.26	2	*8.5*[abc]	3.3	No[d]
Vanadium	(V)	79.4	26	N/A	2.9		
Zinc	(Zn)	214	1,100	N/A	177		

Step 3: Non-Cancer Risk CAHI (Al, As, Ba, Be, Fe, Mn, and Tl)	6.6
Step 3: Cancer Risk CAHI (1,1,-DCE, PCE, TCE, and As)	966 $x10^{-6}$
Step 5: Recalculated Non-Cancer Risk CAHI for PCOCs (As, Ba, and Be)	0.8
Step 5: Recalculated Cancer Risk CAHI for PCOCs (1,1,-DCE, PCE, TCE, and As)	9.7 $x10^{-4}$

Notes:

RBC = Risk Based Concentration; HQ = Hazard Quotient; MCL = Maximum Contaminant Level
Max = Maximum Concentration; AHI = Apparent Hazard Index; CAHI = Cumulative Apparent Hazard Index
PCOC = Potential Constituent of Concern; N/A = Not Applicable; ND = Constituent Not Detected Above Instrument Quantitation Limit
Bolded value indicates "B" flagged result reported; italicized value indicates "K" flagged result reported
[a] MCL exceedance
[b] RBC (at HQ=0.1) exceedance
[c] CAHI exceeds screening criterion (1 for non-cancer risk, $1x10^{-6}$ for cancer risk)
[d] Eliminated as a PCOC via comparison to background in Step 4
[e] Eliminated as a PCOC via recalculated CAHI in Step 5

Table 6
Screening Comparison for SWMU 37B Confirmatory Soil Samples

	Facility Background				SWMU Samples			
	Subsurface Soil		Residential RBC	SSL	Subsurface Soil			
	Max	Mean	(HQ=0.1)	(DAF=20)	Max (Steps 1, 4, 6)	AHI (Step 2)	Mean (Step 4)	PCOC? (Steps 4, 5)
Volatile Organic Compounds (ug/kg)								
2-Butanone	N/A	N/A	4.7E+06	7.9E+03	9			
Acetone	N/A	N/A	7.8E+05	2.5E+03	97			
Cumene	N/A	N/A	7.8E+05	6.4E+04	4			
Ethylbenzene	N/A	N/A	7.8E+05	3.6E+01	2			
m- and p-Xylene	N/A	N/A	1.6E+07	2.3E+05	2			
Methylcyclohexane	N/A	N/A	N/A	N/A	6			
Semi-volatile Organic Compounds (ug/kg)								
Benzo(a)anthracene	N/A	N/A	8.7E+02	1.5E+03	52.1			
Benzo(a)pyrene (C)	N/A	N/A	8.7E+01	3.7E+02	50.6			
Benzo(b)fluoranthene	N/A	N/A	8.7E+02	4.5E+03	55.9			
Benzo(k)fluoranthene	N/A	N/A	8.7E+03	4.5E+04	51			
bis(2-Ethylhexyl)phthalate	N/A	N/A	4.6E+04	2.9E+06	**56.1**			
Chrysene	N/A	N/A	8.7E+04	1.5E+05	72			
Fluoranthene	N/A	N/A	3.1E+05	6.3E+06	127			
Phenanthrene	N/A	N/A	2.3E+05	6.8E+05	75.3			
Pyrene	N/A	N/A	2.3E+05	6.8E+05	106			
Polychlorinated Biphenyls (ug/kg)								
No Detections	N/A	N/A	N/A	N/A	N/A			
Explosives (mg/kg)								
No Detections	N/A	N/A	N/A	N/A	N/A			
Total Petroleum Hydrocarbons (mg/kg)								
TPH-DRO	N/A	N/A	300*	--	220[g]			
TPH-GRO	N/A	N/A	150*	--	54[g]			
Inorganics (mg/kg)								
Aluminum (Al)	22,500	13,128	7,800	N/A	7960			
Antimony (Sb)	3.0	2.3	3.1	13	7.4[abd]	0.24	2.4[c]	No[f]
Arsenic (C) (As)	13.1	8.15	0.43	0.026	7.9[ab]	18.4	5.3	No[e]
Arsenic (N) (As)	13.1	8.15	2.3	0.026	7.9[ab]	0.34	5.3	No[e]
Barium (Ba)	220	108	550	2,100	130			
Beryllium (Be)	1.5	0.85	16	1,200	1.1			
Cadmium (Cd)	2.3	0.45	7.8	27	0.68			
Calcium (Ca)	67,000	14,647	N/A	N/A	272,000			
Chromium (Cr)	24	16.4	23	42	15.7			
Cobalt (Co)	19	12.7	160	N/A	18.7			
Copper (Cu)	31.6	24.6	310	11,000	20.3			
Iron (Fe)	41,300	30,215	2,300	N/A	31,400[ab]	1.37	23800	No[e]
Lead (Pb)	23.2	15.2	400**	N/A	48.4			
Magnesium (Mg)	2,730	2,108	N/A	N/A	27,600			
Manganese (Mn)	1,240	585	160	950	1,190[ab]	0.74	766[c]	No[e]
Mercury (Hg)	0.050	0.020	2.3	N/A	0.06			
Nickel (Ni)	27.0	22.3	160	N/A	27.5			
Potassium (K)	1,880	1,430	N/A	N/A	952			
Selenium (Se)	0.48	0.20	39	19	1.1			
Sodium (Na)	105	21.8	N/A	N/A	1,160			
Vanadium (V)	33.4	20.9	55	5,100	24.5			
Zinc (Zn)	87	52.5	2,300	14,000	83.4			

Step 3: Non-Cancer Risk CAHI (As, Fe, Mn, and Sb)	2.69
Step 3: Cancer Risk CAHI (As)	18.4 x10^{-6}
Step 5: Recalculated Non-Cancer Risk CAHI (Sb)	0.24
Step 5: Recalculated Cancer Risk CAHI	NA

Notes:

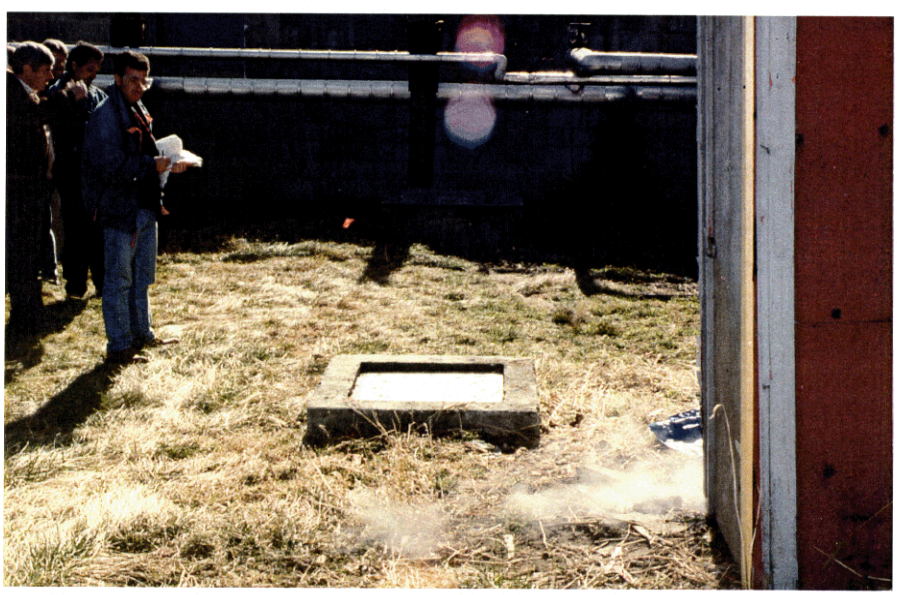
RBC = Risk Based Concentration; HQ = Hazard Quotient; SSL = Soil Screening Level; DAF = Dilution Attenuation Factor
Max = Maximum Concentration; Mean = Mean Concentration; AHI = Apparent Hazard Index; CAHI = Cumulative Apparent Hazard Index; PCOC = Potential Constituent of Concern
N/A = Not Applicable; ND = Constituent Not Detected Above Instrument Quantitation Limit; *SWMU-specific TPH cleanup level; **lead action level
(C) = cancer risk screening criteria; (N) = non-cancer risk screening criteria
Bolded value indicates "B" flagged result reported; italicized value indicates "K" flagged result reported

[a] RBC (at HQ=0.1) exceedance
[b] CAHI exceeds screening criterion (1 for non-cancer risk, 1x10^{-6} for cancer risk)
[c] Mean constituent concentration exceeds mean background concentration
[d] Maximum constituent concentration exceeds maximum background concentration
[e] Eliminated as a PCOC via background comparison in Step 4
[f] Eliminated as a PCOC via recalculated CAHI in Step 5
[g] Eliminated as a PCOC because value is less than the SWMU-specific TPH cleanup level

ATTACHMENT A: 1993, 1995, 2000, and 2001 SWMU PHOTOS

Photograph No.: 1 Direction: --
Date: February 4, 1993

Description: A view of the inside of one of the Wastewater Sumps (SWMU 37B) located outside of Building 7.



Photograph No.: 2 Direction: SE
Date: February 4, 1993

Description: A view of the wastewater sump (SWMU 37B is in background) located outside of Building 7.

Photograph No.: 3
Date: October 5, 1995

Direction: SE

Description: A view of the Phase I SWMU/AOC sample location for the wastewater sump (SWMU 37B) located outside of Building 7.

Photograph No.: 4
Date: July 2000

Direction: E

Description: A view of the location of the former Building 7 wastewater sump (SWMU 37B) following sump removal.

Photograph No.: 5 Direction: SW
Date: May 15, 2001

Description: Site restoration at the location of the former Building 7 wastewater sump (SWMU 37B) following sump removal.